# **Exhibit C**

### REPORT PREPARED BY LAURENCE STEINBERG, PH.D.

re: U.S. . Joseph Wang (CR-90-1019)

#### PROFESSIONAL POSITION

- 1. My name is Laurence Steinberg. My address is 1924 Pine Street, Philadelphia, Pennsylvania, 19103, USA.
- 2. I hold the degrees of A.B. in Psychology from Vassar College (Poughkeepsie, New York) and Ph.D. in Human Development and Family Studies from Cornell University (Ithaca, New York).
- 3. I am a developmental psychologist specializing in adolescence, broadly defined as the second decade of life. I am on the faculty at Temple University, in Philadelphia, Pennsylvania, USA, where I am the Distinguished University Professor and Laura H. Carnell Professor of Psychology. I am a Fellow of the American Psychological Association, the Association for Psychological Science, and the American Academy of Arts and Sciences, and a member of the Society for Research in Child Development and the Society for Research on Adolescence. I was a member of the National Academies' Board on Children, Youth, and Families and chaired the Academies' Committee on the Science of Adolescence. I was President of the Division of Developmental Psychology of the American Psychological Association and President of the Society for Research on Adolescence.
- 4. I received my Ph.D. in 1977 and have been continuously engaged in research on adolescent development since that time. I am the author or co-author of approximately 400 scientific articles and 17 books on young people. Prior to my appointment at Temple University, where I have been since 1988, I was on the faculty at the University of Wisconsin—Madison (1983-1988) and the University of California, Irvine (1977-1983). From 1997-2007, I directed the John D. and Catherine T.

<sup>&</sup>lt;sup>1</sup> Throughout this document, "adolescence" refers to the period of development from age 10 to age 20.

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MacArthur Foundation Research Network on Adolescent Development and Juvenile Justice, a national multidisciplinary initiative on the implications of research on adolescent development for policy and practice concerning the treatment of juveniles in the legal system.

- 5. Since 1997, I have been engaged in research on the implications of research on adolescent development for legal decisions about the behavior of young people. More specifically, my colleagues and I have been studying whether, to what extent, and in what respects adolescents and adults differ in ways that may inform decisions about the treatment of juveniles under the law.
- 6. I have qualified as an expert in state courts in New York, Pennsylvania, and Wisconsin, as well as the United States District Court for the Eastern District of New York. I have also been deposed as an expert in cases in California, Colorado, Pennsylvania, and Rhode Island, as well as in U.S. District Court. In addition, I was the lead scientific consultant for the American Psychological Association when the Association filed Amicus Curiae briefs in *Miller v. Alabama*, 132 S. Ct. 2455 (2012); *Graham v. Florida*, 560 U.S. 48 (2011); and *Roper v. Simmons*, 543 U.S. 551 (2005).

## REFERRAL QUESTION

7. Postconviction counsel for Joseph Wang, who was 16 years old at the time of the charged crime, requested that I outline the current understanding of neurobiological and psychological development in teenage populations, the ways in which neurobiological immaturity impacts behavior and psychosocial development during this period, and the basis for and evolution of the understanding of ongoing behavioral development during teenage years, along with the departure of this newer understanding from assumptions held for decades about human emotional, social, and cognitive development. Postconviction counsel for Mr. Wang also asked that I assess how those scientific findings inform the understanding of Mr. Wang's adolescent conduct and growth during his time in prison, as well as Mr. Wang's capacity for change since the time of his criminal conduct.

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#### **DOCUMENTS**

8. I received and reviewed the following materials provided by Mr. Wang's counsel: The original PSR (which also contains objections and the first addendum), dated July, 1992; the second PSR addendum, dated October, 2016; the transcript of the January, 1992 hearing regarding whether to try Mr. Wang as an adult; the October, 1992 sentencing transcript; the amended judgment, dated August, 1995; Mr. Wang's April, 2013 "inmate skills development plan" progress report; Mr. Wang's October, 2013 BOP health services report; Mr. Wang's September, 2016 "inmate skills development plan" progress report; and the psychiatric evaluation of Mr. Wang conducted by Dr. Richard G. Dudley, Jr., dated January 25, 2017.

#### BRAIN DEVELOPMENT CONTINUES BEYOND THE TEEN YEARS

- 9. For most of the 20<sup>th</sup> century, scientists believed that brain maturation ended sometime during late childhood, a conclusion based on the observation that the brain reached its adult size and volume by age ten. This conclusion began to be challenged in the late 1990s, as a result of research that examined patterns of brain activity, rather than focusing solely on the brain's external appearance.
- 10. The advent of functional Magnetic Resonance Imaging (fMRI) permitted scientists and researchers to actually observe the brains of living individuals and examine their responses to various stimuli and activities. The results of this examination demonstrated that development of key brain systems and structures, especially those involved in self-regulation and higher-order cognition, continue to mature throughout adolescence.<sup>2</sup>
- 11. In response to these revelations about ongoing brain maturation, researchers began to focus on the ways in which adolescent behavior is more accurately

<sup>&</sup>lt;sup>2</sup> Gogtay, N., et al. (2004). Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academies of Sciences*, 101, 8174–8179; Sowell, E., et al. (2004). Longitudinal mapping of cortical thickness and brain growth in normal children. *Journal of Neuroscience*, 24, 8223–8231.

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characterized as reflecting psychological and neurobiological immaturity.<sup>3</sup> The results of many of these studies and descriptions of adolescent behavior were used by the United States Supreme Court, first in *Roper v. Simmons*, and later in *Graham v. Florida* and *Miller v. Alabama*, as the foundation for the high court's conclusions that adolescents prior to the age of majority should not be treated as adults by the criminal justice system because their brains and resulting behavior cannot be characterized as fully mature and, as a consequence, that their culpability is not comparable to and should not be equated with that of fully mature adults.<sup>4</sup> In addition, the Court noted that because psychological and neurobiological development were still ongoing in adolescence, individuals were still amenable to change and able to profit from rehabilitation.

12. Further study of brain maturation conducted during the past decade has revealed that several aspects of brain development affecting judgment and decision-making are not only ongoing during adolescence, but continue well beyond age 20. As more research confirming this conclusion has accumulated, the notion that brain maturation continues into young adulthood has become widely accepted among neuroscientists. <sup>5</sup> This contemporary view of brain development as ongoing at least until

<sup>&</sup>lt;sup>3</sup> Steinberg, L., & Scott, E. (2003). Less guilty by reason of adolescence: Developmental immaturity, diminished responsibility, and the juvenile death penalty. *American Psychologist*, *58*, 1009-1018.

The American Psychological Association filed briefs as amicus curiae in each of these cases, outlining the state of neuropsychological and behavioral research on adolescent brain development and behavior for the Court. *See* Brief for the American Psychological Association, American Psychiatric Association, and National Association of Social Workers as Amici Curiae in Support of Petitioners, *Miller v. Alabama*, \_\_\_\_ U.S. \_\_\_\_, 132 S. Ct. 2455 (2012) (No. 10-9646); Brief for the American Psychological Association, American Psychiatric Association, National Association of Social Workers, and Mental Health America as Amici Curiae Supporting Petitioners, *Graham v. Florida*, 560 U.S. 48 (2010) (No. 08-7412), *Sullivan v. Florida*, 560 U.S. 181 (2010) (No. 08-7621); Brief for the American Psychological Association, and the Missouri Psychological Association as *Amici Curiae* Supporting Respondent, *Roper v. Simmons*, 543 U.S. 551 (2005) (No. 03-633).

Dosenbach, N., et al. (2011). Prediction of individual brain maturity using fMRI. *Science*, *329*, 1358–1361; Fair, D., et al. (2009). Functional brain networks develop from a "local to distributed" organization. *PLoS Computational Biology*, *5*, 1–14; Hedman A., van Haren N., Schnack H., Kahn R., & Hulshoff Pol, H. (2012). Human brain changes across the life span: A review of 56 longitudinal magnetic resonance

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the mid-twenties stands in marked contrast to the view held by scientists as recently as 15 years ago.

#### PSYCHOLOGICAL IMMATURITY IN ADOLESCENCE

- 13. Research on psychological development during adolescence and young adulthood conducted during the past 15 years has also led scientists to revise longstanding views of these stages. Conclusions drawn from this psychological research parallel those drawn from recent studies of brain development and indicate that individuals in their late teens are less mature than their older counterparts in important and legally-relevant ways.<sup>6</sup>
- 14. First, adolescents are more likely than adults to underestimate the number, seriousness, and likelihood of risks involved in a given situation. When asked to make a decision about a course of action, compared to adults, adolescents have more difficulty identifying the possible costs and benefits of each alternative, underestimate the chances of various negative consequences occurring, and underestimate the degree to which they could be harmed if the negative consequences occurred.<sup>7</sup>
- 15. Second, adolescents are more likely than adults to engage in what psychologists call "sensation-seeking," that is, the pursuit of arousing, rewarding, or

imaging studies. *Human Brain Mapping*, *33*, 1987-2002; Pfefferbaum, A., Rohlfing, T., Rosenbloom, M., Chu, W., & Colrain, I. (2013). Variation in longitudinal trajectories of regional brain volumes of healthy men and women (ages 10 to 85 years) measured with atlas-based parcellation of MRI. *NeuroImage*, *65*, 176-193; Simmonds, D., Hallquist, M., Asato, M., & Luna, B. (2014). Developmental stages and sex differences of white matter and behavioral development through adolescence: A longitudinal diffusion tensor imaging (DTI) study. *NeuroImage*, *92*, 356-368). Leah H. Somerville et al., *A Time of Change: Behavioral and Neural Correlates of Adolescent Sensitivity to Appetitive and Aversive Environmental Cues*, 72 Brain & Cognition 124 (2010).

<sup>&</sup>lt;sup>6</sup> For a recent review of this research, see Laurence Steinberg, *Age of opportunity: Lessons from the new science of adolescence*. New York: Houghton Mifflin, Harcourt, 2014.

<sup>&</sup>lt;sup>7</sup> Grisso, T., Steinberg, L., Woolard, J., Cauffman, E., Scott, E., Graham, S., Lexcen, F., Reppucci, N., & Schwartz, R. (2003). Juveniles' competence to stand trial: A comparison of adolescents' and adults' capacities as trial defendants. *Law and Human Behavior*, 27, 333-363).

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novel experiences. As a consequence of this, adolescents are more apt to focus on the potential rewards of a given decision than on the potential costs.<sup>8</sup> Other studies have indicated that heightened risk taking among adolescents is due to the greater attention they pay to the potential rewards of a risky choice relative to the potential costs. This tendency is especially pronounced among individuals in their late teens.<sup>9</sup>

- 16. Third, adolescents are less able than adults to control their impulses and consider the future consequences of their actions and decisions. In general, adolescents are more short-sighted and less planful, and they have more difficulty than adults in foreseeing the possible outcomes of their actions and regulating their behavior accordingly. Importantly, gains in impulse control continue to occur well into the early twenties.<sup>10</sup>
- 17. Fourth, the development of basic cognitive abilities, including memory and logical reasoning, matures before the development of emotional maturity, including the ability to exercise self-control, properly consider the risks and rewards of alternative courses of action, and resist coercive pressure from others. As a consequence of this gap between intellectual and emotional maturity, the tendencies of adolescents, relative to individuals in their mid-twenties, to be more focused on rewards, more impulsive, and more myopic are exacerbated when adolescents are making decisions in situations that are emotionally arousing, including those that generate negative emotions, such as

Steinberg, L., Albert, D., Cauffman, E., Banich, M., Graham, S., & Woolard, J. (2008). Age differences in sensation seeking and impulsivity as indexed by behavior and self-report: Evidence for a dual systems model. *Developmental Psychology*, 44, 1764-1778)

<sup>&</sup>lt;sup>9</sup> Cauffman, E., Shulman, E., Steinberg, L., Claus, E., Banich, M., Graham, S., & Woolard, J. (2010). Age differences in affective decision making as indexed by performance on the Iowa Gambling Task. *Developmental Psychology*, 46, 193-207.

Steinberg, L., Graham, S., O'Brien, L., Woolard, J., Cauffman, E., & Banich, M. (2009). Age differences in future orientation and delay discounting. *Child Development*, 80, 28-44); Steinberg, L., Albert, D., Cauffman, E., Banich, M., Graham, S., & Woolard, J. (2008) Age differences in sensation seeking and impulsivity as indexed by behavior and self-report: Evidence for a dual systems model. *Developmental Psychology*, 44, 1764-1778.

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fear, threat, or anxiety. Accordingly, adolescents' deficiencies in judgment, relative to adults, are greater under circumstances in which emotions are aroused.<sup>11</sup>

18. Fifth, these inclinations are exacerbated by the presence of peers. It is well established that a disproportionate amount of adolescent risk taking occurs in the presence of peers. 12 Scientists believe that this is because, when they are with their peers, adolescents pay relatively more attention to the potential rewards of a risky decision than they do when they are alone, and that they are especially drawn to immediate rewards. In our lab, we have shown that the presence of peers activates the brain's "reward center" among adolescents, but has no such effect on adults. 13 Studies also show that adolescents are more susceptible than adults to overt peer pressure, and that boys are especially susceptible to pressure to engage in antisocial activity. <sup>14</sup> My colleagues and I have also found that adolescents are more likely than adults to accede to the wishes of others and, especially, to comply with the recommendations of authority figures, often failing to consider the full ramifications of their decisions. 15 It is thus not surprising that a disproportionate number of juvenile crimes occur when adolescents are in groups, and that teenagers are especially susceptible to pressure from somewhat older individuals to engage in antisocial activity.

Steinberg, L., Cauffman, E., Woolard, J., Graham, S., & Banich, M. (2009). Are adolescents less mature than adults? Minors' access to abortion, the juvenile death penalty, and the alleged APA "flip-flop". *American Psychologist*, *64*, 583-594.

Albert, D., & Steinberg, L. (2011). Peer influences on adolescent risk behavior. In M. Bardo, D. Fishbein, & R. Milich (Eds.), *Inhibitory control and drug abuse prevention: From research to translation*. (Part 3, pp. 211-226). New York: Springer).

Albert, D., Chein, J., & Steinberg, L. (2013). The teenage brain: Peer influences on adolescent decision-making. *Current Directions in Psychological Science*, 22, 114-120

Steinberg, L., & Monahan, K. (2007). Age differences in resistance to peer influence. *Developmental Psychology*, *43*, 1531-1543.

<sup>&</sup>lt;sup>15</sup> Grisso, T., Steinberg, L., Woolard, J., Cauffman, E., Scott, E., Graham, S., Lexcen, F., Reppucci, N., & Schwartz, R. (2003). Juveniles' competence to stand trial: A comparison of adolescents' and adults' capacities as trial defendants. *Law and Human Behavior*, 27, 333-363).

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- 19. The combination of heightened attentiveness to rewards and still-maturing impulse control makes middle and late adolescence a period of greater risk taking than any other stage of development. This has been demonstrated both in studies of risk-taking in psychological experiments (when other factors, such as outside influences, can be controlled) and in the analysis of data on risky behavior in the real world.
- 20. In recent experimental studies of risk taking in the lab, the peak age for risky decision-making was late adolescence. This age trend is consistent with epidemiological data on age trends in risky behavior, which show peaks in the adverse outcomes of risk-taking in the late teens and early 20s on a wide range of behaviors, including driver deaths, unintended pregnancy, arrests for violent and non-violent crime, and binge drinking. <sup>17</sup>

## NEUROBIOLOGICAL ACCOUNTS OF ADOLESCENT IMMATURITY

21. Many scientists, including myself, believe that the main underlying cause of psychological immaturity during adolescence is the different timetables along which two important brain systems change during adolescence, sometimes referred to as a "maturational imbalance." The system that is responsible for the increase in sensation-seeking and reward-seeking that takes place in adolescence undergoes dramatic changes very early in adolescence, around the time of puberty. Attentiveness to rewards remains high through the late teen years and into the early twenties. But the system that is responsible for self-control, regulating impulses, thinking ahead, evaluating the rewards and costs of a risky act, and resisting peer pressure is still

<sup>&</sup>lt;sup>16</sup> Braams, B., van Duijvenvoorde, A., Peper, J., & Crone, E. (2015). Longitudinal changes in adolescent risk-taking: A comprehensive study of neural responses to rewards, pubertal development and risk taking behavior. *Journal of Neuroscience*, *35*, 7226-7238; Shulman, E., & Cauffman, E. (2014). Deciding in the dark: Age differences in intuitive risk judgment. *Developmental Psychology*, *50*, 167-177).

Willoughby, T., Good, M., Adachi, P.J.C., Hamza, C.A., & Tavernier, R. (2013). Examining the link between adolescent brain development and risk taking from a social-developmental perspective. *Brain and Cognition*, *83*, 315-323).

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undergoing significant maturation well into the mid-twenties.<sup>18</sup> Thus, during middle and late adolescence there is an imbalance between the reward system and the self-control system that inclines adolescents toward sensation-seeking and impulsivity. As this "maturational imbalance" diminishes, during the mid-20s, there are improvements in such capacities as impulse control, resistance to peer pressure, planning, and thinking ahead.<sup>19</sup>

22. Studies of structural and functional development of the brain in adolescence are consistent with this view. Specifically, research on neurobiological development shows continued maturation into the early- or even mid-20s of brain regions and systems that govern various aspects of self-regulation and executive function. These developments involve structural (anatomical) and functional (activity) changes in the prefrontal and parietal cortices as well as improved structural and functional connectivity between cortical and subcortical regions. <sup>20</sup> Although the development of the prefrontal cortex is largely complete by the late teens, the maturation of connections between this region and regions that govern self-regulation and the brain's emotional centers continues beyond the early 20s and may not be complete until

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Casey, B. J., et al. (2010). The storm and stress of adolescence: Insights from human imaging and mouse genetics. *Developmental Psychobiology*, *52*, 225-235; Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. Developmental Review, 28, 78-106; Van Leijenhorst, L., Moor, B. G., Op de Macks, Z. A., Rombouts, S. A. R. B., Westenberg, P. M., & Crone, E. A. (2010). Adolescent risky decisionmaking: Neurocognitive development of reward and control regions. *NeuroImage*, *51*, 345–355.

Albert, D., & Steinberg, L. (2011). Judgment and decision making in adolescence. *Journal of Research on Adolescence*, *21*, 211-224; Blakemore, S-J., & T. Robbins, T. (2012). Decision-making in the adolescent brain. *Nature Neuroscience*, *15*, 1184-1191.

For reviews of changes in brain structure and function during adolescence and young adulthood, see Blakemore, S-J. (2012). Imaging brain development: The adolescent brain. *Neuroimage*, 61, 397-406; Engle, R. (2013). The teen brain. *Current Directions in Psychological Science*, 22 (2) (whole issue); and Luciana, M. (Ed.) (2010). Adolescent brain development: Current themes and future directions. *Brain and Cognition*, 72 (2), whole issue.

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the mid-20s.<sup>21</sup> As a consequence, during the late teen years, and even in young adulthood, individuals may have difficulty controlling impulses, especially in emotionally arousing situations.

- 23. A recent study that my colleagues and I conducted of teenagers, young adults, and individuals in their mid-twenties, illustrates this point. We assessed individuals' impulse control while experimentally manipulating their emotional state. Under conditions during which individuals were not emotionally aroused, individuals between 18 and 21 were able to control their impulses as well as those in their midtwenties. But under emotionally arousing conditions, 18- to 21-year-olds demonstrated levels of impulsive behavior comparable to those in their mid-teens.<sup>22</sup>
- 24. In addition to this "maturational imbalance," one of the hallmarks of neurobiological development during adolescence is the heightened malleability, or "plasticity," of the brain. Plasticity refers to the capacity of the brain to change in response to experience. Humans experience varied levels of neuroplasticity throughout their lifetimes, with marked neuroplasticity continuing through the late teen years and into the early twenties.<sup>23</sup> Like teenagers prior to the age of majority, eighteen and nineteen year olds also demonstrate continued great capacity for behavioral change.<sup>24</sup> Given adolescents' ongoing neurobiological and character development, it is difficult to predict future criminality or delinquent behavior from antisocial behavior during the

Steinberg, L. (2013). The influence of neuroscience on U.S. Supreme Court decisions involving adolescents' criminal culpability. *Nature Reviews Neuroscience*, 14, 513-518.

<sup>&</sup>lt;sup>22</sup> Cohen, A., Breiner, K., Steinberg, L., Bonnie, R., Scott, E., Taylor-Thompson, K., . . . Casey, B.J. (2016). When is an adolescent an adult? Assessing cognitive control in emotional and non-emotional contexts. *Psychological Science*, *4*, 549-562.

<sup>23</sup> Steinberg, Age of Opportunity.

<sup>&</sup>lt;sup>24</sup> Kays, J., Hurley, R., & Taber, K. (2012). The dynamic brain: Neuroplasticity and mental health, *Journal of Clinical Neuropsychology & Clinical Neuroscience*, 24, 118-124; Thomas, M. & Johnson, M. (2008). New advances in understanding sensitive periods in brain development. *Current Directions in Psychological Science*, 17, 1-5.

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teen years, even among teenagers accused of committing violent crimes.<sup>25</sup> My colleagues and I, along with other researchers, have conducted studies finding that approximately ninety percent of serious juvenile offenders age out of crime and do not continue criminal behavior into adulthood.<sup>26</sup>

## SUMMARY OF SCIENTIFIC FINDINGS

- 25. Extensive studies demonstrate that important neurobiological development is ongoing throughout the teenage years and continuing into the early twenties. As a result of neurobiological immaturity, teenagers, even those past the age of majority, continue to demonstrate difficulties in exercising self-restraint, controlling impulses, considering future consequences, and making decisions independently from their peers. Heightened susceptibility to emotionally laden and socially charged situations renders young adults more vulnerable to the influence of their peers, and in such situations teenagers are even less able to consider and weigh the risks and consequences of a chosen course of action.
- 26. The research in developmental psychology and developmental neuroscience outlined above explains the ways in which psychological and neurobiological maturation contributes to the gradual decrease in crime that takes place during young adulthood. Improvements in self-control, resistance to peer pressure, and future orientation, which naturally occur during late adolescence and continue into young adulthood, help account for the decrease in criminal activity occurring during these developmental periods. In other words, as the brain undergoes normal maturation

 $^{25}$  Moffitt, T. (2006). Life-course persistent versus adolescent-limited antisocial behavior. In (D. Cicchettti & D. Cohen eds.) *Developmental Psychopathology* (Vol. 3,  $2^{\rm nd}$  ed.) (pp. 570-598).

Monahan, K., Steinberg, L., Cauffman, E., & Mulvey, E. (2013). Psychosocial (im)maturity from adolescence to early adulthood: Distinguishing between adolescence-limited and persistent antisocial behavior. *Development and Psychopathology*, 25, 1093–1105. Mulvey, E., Steinberg, L., Piquero, A., Besana, M., Fagan, J., Schubert, C., & Cauffman, E. (2010). Trajectories of desistance and continuity in antisocial behavior following court adjudication among serious adolescent offenders. *Development and Psychopathology*, 22, 453-475.

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during adolescence and young adulthood, antisocial behavior becomes increasingly unlikely.<sup>27</sup>

#### APPLICATION OF SCIENTIFIC FINDINGS TO THE PRESENT CASE

- At the time of the offense, Joseph Wang was 16 years old. I have not met Mr. Wang, who is now in his 40s, but I see nothing in the record to suggest that he was markedly atypical for someone his age at the time the offense occurred. It is therefore my professional opinion that the findings of scientific studies of adolescent psychological and brain development apply to Mr. Wang's behavior and psychological functioning at the time of the offense. His exemplary behavioral record since the time of his incarceration indicates that Joseph has matured considerably since the offense and strongly suggests that he is highly unlikely to become involved in further criminal activity. This opinion is consistent with the conclusion reached by Dr. Richard G. Dudley, a psychiatrist who conducted an extensive evaluation of Mr. Wang's history and current psychological functioning.
- 28. Much has been learned about adolescent brain and behavioral development since the time of Mr. Wang's conviction. I believe that in considering resentencing Mr. Wang, his crime should be judged in the context of what we now know about adolescent development and decision making. As a 16-year-old whose behavior was likely influenced by the behavioral and neurobiological immaturity I have described in the preceding paragraphs, Mr. Wang would have been expected to exercise poorer judgment, to have more difficulties in impulse control, to more likely fail to give proper consideration to the longer-term consequences of his decisions, and to be more susceptible to the influence of peers, especially older and more powerful ones.
- 29. The inherently weaker ability of adolescents to regulate impulsive behavior, foresee the likely consequences of their actions, appropriately attend to the potentially harmful consequences of a risky decision, and resist external influences to

Monahan, K., Steinberg, L., & Cauffman, E. (2009). Affiliation with antisocial peers, susceptibility to peer influence, and desistance from antisocial behavior during the transition to adulthood. *Developmental Psychology*, 45, 1520-1530. Monahan, K., Steinberg, L., Cauffman, E., & Mulvey, E. (2009). Trajectories of antisocial behavior and psychosocial maturity from adolescence to young adulthood. *Developmental Psychology*, 45, 1654-1668.

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engage in undesirable behavior, all of which are linked to immaturity in brain development, renders them inherently less responsible than adults. As noted earlier, youthful immaturity was considered by the Supreme Court in *Roper*, *Graham*, and *Miller* to diminish the criminal responsibility of juveniles and therefore disqualify them from capital punishment in all cases, from life without parole in the case of non-homicide crimes, and from mandatory life without parole. I believe that, in light of what we now know about adolescent development, the sentence of life without the possibility of parole was excessive in Mr. Wang's case.

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#### STATEMENT OF TRUTH

30. Throughout my report I have attempted to be accurate and complete and to discuss all matters that I regard as being relevant to the opinions expressed within my report.

- 31. I have indicated the source of any factual information upon which I have based an opinion on facts.
- 32. I have not included anything in my report that has been suggested to me by anyone without forming my own view on the matter.
- 33. I have received payment for my consultation with counsel and for the preparation of this report.
- 34. Where a range of reasonable opinion is present, I have indicated the extent of that range in my report.
- 35. If I believe that my existing report requires any correction or qualification, I will notify my instructing attorneys immediately in writing. If the correction or qualification is significant, I will prepare a supplementary report as soon as possible.
- 36. I believe that the facts I have stated in this report are true and that the opinions I have expressed are correct.

Laurence Steinberg, Ph.D.

Jamenes Stewhen

Philadelphia, January 30, 2017